Educational Administration: Theory and Practice
2024, 30(3), 2977-2983
ISSN: 2148-2403
https://kuey.net/

Research Article

Comparative Analysis Of Research Output Of Delhi Technological University Indexed In Scopus And Web Of Science (2014-2023)

Praveen Kapoor[1*] and Ashok Kumar Upadhyay[2]

[1*,2]Department of Library and Information Science, Mangalayatan University, Aligarh, UP 202146 Email: praveenkapoor2003@yahoo.co.in, ashok.upadhyay@mangalayatan.edu.in

Citation: Praveen Kapoor, et.al (2024), Comparative Analysis Of Research Output Of Delhi Technological University Indexed In Scopus And Web Of Science (2014-2023), *Educational Administration: Theory and Practice*, 30(3) 2977-2983
Doi: 10.53555/kuey.v30i3.8841

ARTICLE INFO

ABSTRACT

This research study attempts to examine the impact of research output of Delhi Technological University represented by the Scopus and Web of Science databases during the year 2014-23. This study attempt to analyse the publication and citation growth of DTU reflected in Web of Science and Scopus. Analyse the leading publication source and most influencing authors represented by both the database. Findings shows that faculty and researchers at DTU prefer to publish with Scopus indexed publication sources as compared to Web of Science indexed publication sources and research articles are the most prevalent type of documents published by both the databases. Result also shows that Professor Neeta Pandey is the most influential and prolific author at Delhi Technological University. Materials Today: Proceedings indexed with Scopus having 205 publications and Journal of Luminescence with 168 publications indexed with Web of Science are the most prominent publication source. Web of Science and Scopus produce different results and contain various publication sources, although they also include similar papers. The databases have different profiles for individual and institutional researchers.

Keywords: Citation Databases; Delhi Technological University; DTU; Research Productivity; Scopus; Web of Science (WOS)

1. Introduction

The assessment of research output is essential for assessing the academic reputation, quality, performance, and impact of educational institutions in the evolving landscape of research. The terms bibliometrics, Scientometrics, and citation analysis are commonly used to study and analyse the scientific activities of individual researchers, institutions, countries, and publication sources. The bibliometric and citation data of researchers and institutions play a conclusive role in the assessment of research productivity, the accreditation and ranking of institutions, the allocation of scientific projects, and the provision of research funding and grants (Yelne et al., 2021). Researchers and academicians widely use citation and bibliometric databases for their academic research, serving as valuable sources of bibliographic and citation data. WOS and Scopus are the most extensively utilised subscription-based citation databases that index scientific publications, research papers, conference proceedings, books, etc. Both Scopus and Web of Science are key tools for tracking the research output of educational institutions; however, they are different in coverage, metrics, and indexing criteria. Similar to this, both databases contain distinct journal titles, although many of them also overlap (Kapoor & Upadhyay, 2023).

Delhi Technological University (DTU) is ranked among the foremost technological universities in India and makes substantial contributions to research across diverse areas. DTU is a leading institute for academic and research fostering innovation and enhancing understanding in the constantly changing realm of science, technology, and information. An assessment of the academic literature and the findings from research carried out by DTU is essential and crucial.
This study intends to perform a comparative examination of the research output of Delhi Technological University (DTU) as exhibited in SCOPUS and Web of Science. An analysis of DTU's research output reflected in Scopus and Web of Science, we intend to elucidate the strengths and areas for enhancement in research

Copyright © 2024 by Author/s and Licensed by Kuey. This is an open access article distributed under the Creative Commons Attribution License which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.

initiatives. Comparative analysis encompasses not only the sheer number of publications but also the citation impact, authorship patterns, and predominant publication sources.

1.1 Delhi Technological University

Delhi Technological University (DTU), previously referred to Delhi College of Engineering (DCE), has a distinguished history of delivering quality education and fostering research and entrepreneurship for more than eighty years. However, DCE was transformed into Delhi Technological University (DTU) in 2009. The university presently provides a range of interdisciplinary and industry-relevant programs in Science, Engineering, Management, and related fields at the undergraduate, postgraduate, and doctoral levels. DTU's ranking has shown consistent improvement on both national and international metrics. The National Institutional Rankings Framework (NIRF) for 2024 placed DTU at number 66th in the Overall category, number 48th in India under University category, and number 27th for engineering schools nationwide. Times Higher Education has placed DTU in the 601–800 range for its world university rankings. DTU has demonstrated exceptional performance in incubation and entrepreneurship. This year, the IIF centre has incubated over 50 companies at DTU.

1.2 Web of Science

Eugene Garfield founded the Institute for Scientific Information (ISI) in the 1960s, making it the first bibliographic database. It was the sole player as far as bibliographic and citation resources were concerned until 2004, when Clarivate Analytica's Web of Science (formerly known as Web of Knowledge) took over. A number of citation indices, including the “Science Citation Index Expanded” (1900–), the “Social Sciences Citation Index” (1900–), and the “Arts and Humanities Citation Index” (1975–), as well as the “Emerging Sources Citation Index” (ESCI) (2005–), the “Conference Proceedings Citation Index” (1990–), “Proceedings, and the Book Citation Index” (2005–), are all part of the Web of Science platform. After acquiring it from Thomson Reuters in 2016, Clarivate Analytics is now the owner of the Web of Science database (Visser et al., 2021). The Web of Science platform covers 34000 journals. Web of Science core collection includes 21900 journals, 2.2 billion cited references, 196 million+ records, 20 million+ funding data, 109 million+ patents, 14.5 million+ data sets, and data studies. Indexed backfiles from 1900 to 1990, including 300000+ conference proceedings and 137000+ books.

1.3 SCOPUS

Elsevier owns and manages Scopus, a source-neutral abstract and citation database, which it released in November 2004. Scopus is a prominent curated abstract and citation database, providing comprehensive worldwide and regional coverage of scientific publications and conference proceedings, and books (Baas et al., 2020). SCOPUS encompasses data from over 7,000 publications across 105 countries, including 17 million researcher profiles, 94,000 institution profiles, and over 89 million curated documents.

2. Review of Literature

Comparative analysis of the scholarly output of educational institutions using citation and abstract databases such as WOS and Scopus is crucial to assessing their academic reputation and impact (Yelne et al., 2021). Comparative analysis of these citation databases provides an opportunity to evaluate coverage in terms of subject area, coverage of publications sources and period of these publication sources, citation count, indexing criteria etc. Both WOS and Scopus are commercial databases widely used for bibliographic and citation information. Scientific community widely used these databases for literature search, to collaborate with peer researchers, tracking citation information, ranking of journals and to find funding opportunities (Aghaei Chadegani et al., 2013). Scopus and Web of Science both cover different areas, although they share some content and even share some publication sources. Coverage of publication sources is a key aspect to consider when comparing both of these citation databases. Scopus provides wider coverage and indexes a greater number of distinctive journals than WOS; however, the extent of overlapped content varies across subject areas. Researchers have extensively compared the WOS and Scopus databases for many years, but they hold varying opinions about which database is superior. Due to their commercial nature and competition, both databases are continuously undergoing improvements. The choice of database usage is solely based on the specific needs and goals of the researchers (Pranckutė, 2021). According to a study, Web of Science (WOS) and Scopus include quality journals, but not all journals in any discipline. The study also found that Scopus and Web of Science under-represent non-English language journals because they predominantly focus on English (AIRryalat et al., 2019). Another analysis found that Web of Science has more Spanish, Portuguese, and other language documents than Scopus, but both databases still favour English language publications (Pranckutė, 2021). Both databases have citation tracking, search, and analysis capabilities. Their search features range from basic to advanced, with searchable fields, various retrieval options, and data presented in various formats, graphics, and terminology. A user's profile, saved searches, and alerts can be customised in either of these databases (Aghaei Chadegani et al., 2013). A study examining the coverage of Scopus, WOS, and Dimensions databases indicates that these citation indices exhibit significant differences in journal coverage. The research reveals notable disparities in research productivity among several nations across these databases, as well as

different coverage across diverse subject domains (Singh et al., 2021). The annual publication trends of documents from Russian institutions indexed in WOS and Scopus are analysed, with particular emphasis on the period beginning in 2013, coinciding with the launch of Project 5-100 by the Government of Russia. There is a breakdown of the numbers according to document type, publishing language, source type, research discipline, nation, and total number of sources. The research indicate that the number of Russian publications is highly dependent on the choice of database and its scope of coverage (Moed et al., 2018).

The academic reputation, performance, and influence of higher education institutions have been measured by a number of studies that compared WOS and Scopus databases from the users' point of view and through comparative examination of academic institutions' research output. A study was done to evaluate the research quality of MSIT as represented in WOS and Scopus, examining the attributes, limitations, and coverage of both databases while analysing their usefulness in evaluating the academic influences of MSIT. An exhaustive search is conducted, including all 1179 publications held by MSIT, which are indexed in Scopus and Web of Science. The investigation covers numerous dimensions, including publication distribution by year and citation count, ACPP & RCI, yearly publication growth, research publications by type of document, relative growth rate and doubling time, top 10 countries by number of publications, relative distribution of journals by research area, rank authors by number of publications, top ten preferred sources, and overlap in journals (Verma & Sharma, 2024). A study evaluating the scholarly publication of Tamil Nadu Agricultural University, as indicated by WOS and Scopus, reveals that faculty members favour publishing in Scopus-indexed sources over those indexed in Web of Science. The USA emerges as the primary country collaborating with the institution, while the “Indian Council of Agricultural Research” is identified as the leading sponsor supporting research activities at the university. “Agriculture College and Research Institute, Madurai” is the leading institution in collaboration as indicated by Scopus, while Kansas State University holds this position in the Web of Science database (Sankar & Prema, 2023). Research aimed at assessing the scholarly output of a “Health Sciences University in Central India”, as represented by WOS and Scopus, revealed that publications are more prevalent in Scopus-indexed sources than in Web of Science. The results suggested that the Collaboration Index of articles in the WOS exceeded that of publications in the Scopus database, with overlapping publications identified in both databases (Yelne et al., 2021). Both citation services are invaluable instruments for evaluating scholarly activity and may serve as complementary resources rather than substitutes. The selection of a citation database can profoundly influence the outcomes.

3. Objectives of the Study:

This research study took place with the following key objectives:

- To analyse the growth of research output of DTU.
- To identify the type of document that has been published.
- To analyse the growth of citations.
- To identify the core authors and core publication source.

4. Scope and Limitations

The present study is limited to the SCOPUS (9694) publications and Web of Science (6065) publications from Delhi Technological University, Delhi. The study is limited to the publications from 2014 to 2023 that are reflected in Web of Science and SCOPUS only.

5. Methodology

The data for this study has been collected from Web of Science and SCOPUS database. The keywords used for searching (in the field: Affiliation name) were “Delhi Technological University”. In total, 15,759 records retrieved from the citation databases during the period of 2014 to 2023 with the search string “Delhi Technological University” from both the citation databases. The extracted data were analysed using Biblioshiny and MS Excel, and a comparative analysis was conducted.

6. Data Interpretation and Analysis

Table 1 shows the information on Delhi Technological University, Delhi as reflected in both Web of Science and SCOPUS database for the period of 2014-2023. It is clear and evident that the faculty members and researchers of DTU published 9694 publications in SCOPUS as compared to Web of Science (6065). International co-authorships are on the higher side in Web of Science (11.79%) as compared to SCOPUS (8.16%) in overall publications during 2014-2023. Table 1 reflects various types of publications contributed by the faculty members and researchers of DTU, such as articles, conference papers, book chapters, reviews, data papers, editorials, errata, letter notes, retracted papers, short surveys, and data papers. Articles are the primary

source of publications in both Web of Science and SCOPUS, and the majority of authors of DTU prefer to publish in SCOPUS.

Table 1: Data Information of Delhi Technological University

Descriptions	**SCOPUS**	**WOS**
Timespan	2014 : 2023	2014 : 2023
Sources (Journals, Books, etc)	2754	2153
Documents	9694	6065
DOCUMENT CONTENTS		
Keywords Plus (ID)	42583	9396
Author's Keywords (DE)	23735	16758
AUTHORS		
Authors	9995	6965
AUTHORS COLLABORATION		
Co-Authors per Doc	3.28	3.39
International co-authorships %	8.16	11.79
DOCUMENT TYPES		
Article	4433	3983
Book Chapters	456	88
Conference Paper	4315	1567
Review	376	371
Other Document Type*	114	56

*Source: created by Author. *NOTE: book, data paper, editorial, erratum, letter note, retracted, short survey is included in other document type***.**

Table 2: No. of Publications and citations of Delhi Technological University

Year	**SCOPUS**				**WOS**			
	TP	**ARG**	**TC**	**Avg. TC**	**TP**	**ARG**	**TC**	**Avg. TC**
2014	318	--	6624	20.83	290	--	5470	18.86
2015	334	5.03	9302	27.85	334	15.17	7681	23.00
2016	507	51.80	10055	19.83	474	41.92	7840	16.54
2017	573	13.02	9158	15.98	448	-5.49	6589	14.71
2018	633	10.47	10869	17.17	477	6.47	7522	15.77
2019	759	19.91	13298	17.52	561	17.61	9635	17.17
2020	1131	49.01	18992	16.79	672	19.79	11744	17.48
2021	1671	47.75	17482	10.46	826	22.92	11399	13.80
2022	1827	9.34	12900	7.06	983	19.01	8888	9.04
2023	1941	6.24	7307	3.76	1000	1.73	5049	5.05
	9694		**115987**		**6065**		**81817**	

Source: created by Author. "NOTE: TP=Total publication, TC=Total Citations, AGR=Average Growth Rate, NCP=not cited papers, CP=cited papers"

Table 2 displays the year-wise research output of Delhi Technological University, Delhi, as reflected in the Web of Science and SCOPUS databases for the period of 2014-2023. During 2014–2023, there was an accountable publication with an average annual growth rate (AAGR) of 23.62 in SCOPUS and 15.46 in Web of Science. Table 2 indicates the increasing trend in the number of publications in both databases. SCOPUS has published a total of 9694 publications, while Web of Science has only published 6065 publications from 2014 to 2023. Table 2 also illustrates the trend in the number of citations from Web of Science and SCOPUS during the period 2014 to 2023. In SCOPUS, the average citation per paper (11.96%) is lower than the average citation per paper (13.49%) in Web of Science.

Table 3: Most leading Source (SCOPUS) of Delhi Technological University

Rank	Source	TP	TC	ACPP	NCP	CP	Start Year	End Year
1	Materials Today: Proceedings	205	1843	8.99	22	183	2015	2023
2	Multimedia Tools and Applications	65	1145	17.62	2	63	2015	2023
3	Journal of Alloys and Compounds	42	1501	35.74	0	42	2014	2023
4	Optical Materials	41	1099	26.80	0	41	2015	2023
5	Journal of Luminescence	34	1669	49.09	0	34	2014	2023
6	Expert Systems with Applications	20	1219	60.95	0	20	2014	2023
7	Scientific Reports	14	989	70.64	1	13	2015	2023
8	Biosensors and Bioelectronics	10	1180	118.00	0	10	2015	2020
9	Applied Soft Computing	9	1043	115.89	0	9	2014	2020
10	Resources, Conservation and Recycling	6	1055	175.83	0	6	2015	2021

"NOTE: TP=Total publication, TC=Total Citations, ACPP=average citations per paper, NCP=not cited papers, CP=cited papers"

Table 4: Most leading Source (WOS) of Delhi Technological University

Rank	Source	TP	TC	ACPP	NCP	CP	Start Year	End Year
1	Materials Today-Proceedings	168	1288	7.67	20	148	2015	2022
2	Multimedia Tools and Applications	84	839	9.99	8	76	2015	2023
3	Optik	46	776	16.87	1	45	2014	2022
4	Journal of Alloys and Compounds	42	1427	33.98	0	42	2014	2023
5	Optical Materials	41	1033	25.20	0	41	2015	2023
6	Journal of Luminescence	34	1604	47.18	0	34	2014	2023
7	Applied Soft Computing	21	1187	56.52	0	21	2014	2023
8	Expert Systems with Applications	20	894	44.70	0	20	2014	2023
9	Biosensors & Bioelectronics	10	1026	102.60	0	10	2015	2020
10	Resources Conservation and Recycling	6	869	144.83	0	6	2015	2021

"NOTE: TP=Total publication, TC=Total Citations, ACPP=average citations per paper, NCP=not cited papers, CP=cited papers"

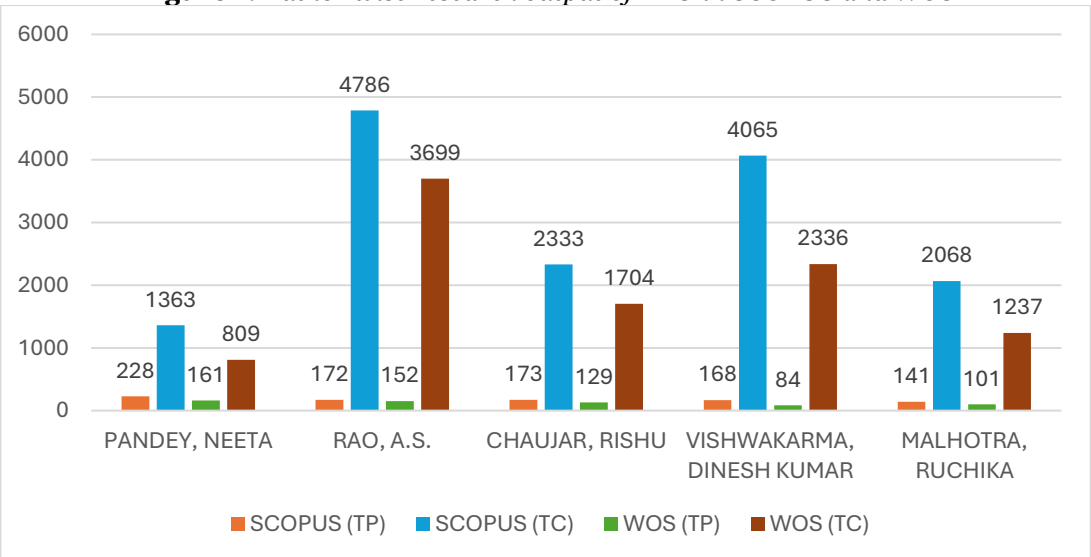
Table 3 shows the predominant source wise publications of Delhi Technological University, Delhi as reflected in SCOPUS database. Materials Today: Proceedings has 205 publications, followed by Multimedia Tools and Applications (65) and Journal of Alloys and Compounds (42) publications. Resources Conservation and Recycling (175.83) receives highest average citation per paper followed by Biosensors and Bioelectronics (118) receives.

Table 4 shows the predominant source wise publications of Delhi Technological University, Delhi as exhibited in Web of Science database. Materials Today-Proceedings has 168 publications, followed by Multimedia Tools and Applications (84) and Optik (46). Resources Conservation and Recycling (144.83) receives highest average citation per paper followed by Biosensors and Bioelectronics (102.60).

From 2014 to 2023, DTU identified a total of 4907 sources on SCOPUS (2754) and Web of Science (2153). Out of the total, approximately 60% of the resources are common across Scopus and WOS citation databases.

Figure 1 displays the top 5 influential authors at DTU, Delhi. Prof. Neeta Pandey has 389 publications with 2172 citations, followed by Prof. A.S. Rao with 324 publications and 8485 citations, and Rishu Chaujar with 302 publications and 4037 citations.

Figure 1: *Author wise research output of DTU in SCOPUS and WOS*



Source: created by author

7. Findings of the study

- Faculty members and researchers at DTU prefer to publish with SCOPUS (9694) indexed publication sources as opposed to Web of Science (6065).
- DTU faculty members and researchers most frequently publish articles on Web of Science and SCOPUS.
- It is widely acknowledged that Professor Neeta Pandey is the most influential and prolific author at Delhi Technological University.
- Materials Today: Proceedings, indexed in SCOPUS with 205 publications, and the Journal of Luminescence, with 168 publications indexed in Web of Science, represent the most significant publication sources of Delhi Technological University.
- The Journal title Resources, Conservation and Recycling receives the highest number of citations, with an average of 175.83 citations per paper on SCOPUS and 144.83 citations per paper on Web of Science.
- There are 918 publications that are included in Tables 3 and 4, and 93.75 percent of those publications have been cited by other writers.

8. Conclusion

The research output of Delhi Technological University (DTU) from 2014 to 2023, as reflected in Web of Science and SCOPUS, reveals significant growth and expansion across various disciplines. This period saw an increase in both the quality and quantity of publications, highlighting DTU's dedication to growing knowledge and innovation. Future research should focus on interdisciplinary collaborations, leveraging emerging technologies, and addressing global challenges. Academicians can utilize a Scientometrics study to gain a deeper understanding of their current circumstances and the research areas requiring attention. Results indicate that Web of Science and Scopus yield different outcomes and encompass distinct publication sources; however, both citation databases also include similar publications. Both databases exhibited distinct research profiles for individual and institutional researchers.

Funding
For the purpose of this study, no funding was obtained.

Disclosure statement
No potential conflict of interest was reported by the author(s).

ORCID
Praveen Kapoor ID https://orcid.org/0000-0003-1522-4480
Ashok Kumar Upadhyay ID https://orcid.org/0000-0002-1859-675X

References

1. Aghaei Chadegani, A., Salehi, H., Md Yunus, M. M., Farhadi, H., Fooladi, M., Farhadi, M., & Ale Ebrahim, N. (2013). A comparison between two main academic literature collections: Web of science and scopus databases. *Asian Social Science*, *9*(5), 18–26. https://doi.org/10.5539/ass.v9n5p18
2. AIRryalat, S. A. S., Malkawi, L. W., & Momani, S. M. (2019). Comparing bibliometric analysis using pubmed, scopus, and web of science databases. *Journal of Visualized Experiments*, *2019*(152). https://doi.org/10.3791/58494
3. Baas, J., Schotten, M., Plume, A., Côté, G., & Karimi, R. (2020). Scopus as a curated, high-quality bibliometric data source for academic research in quantitative science studies. *Quantitative Science Studies*, *1*(1), 377–386. https://doi.org/10.1162/qss_a_00019
4. Kapoor, P., & Upadhyay, A. K. (2023). Comparative Study of Citation Databases: Web of Science & Scopus. *Empowering Libraries, . Connecting Communities Lnnovation,Collaboration A·nd Entrepreneurship*, 212-223p.
5. Moed, H. F., Markusova, V., & Akoev, M. (2018). Trends in Russian research output indexed in Scopus and Web of Science. *Scientometrics*, *116*(2), 1153–1180. https://doi.org/10.1007/s11192-018-2769-8
6. Pranckutė, R. (2021). Web of science (Wos) and scopus: The titans of bibliographic information in today's academic world. *Publications*, *9*(1). https://doi.org/10.3390/publications9010012
7. Sankar, M., & Prema, C. (2023). Comparative Analysis of Research Output of Tamil Nadu Agricultural University as Reflected in Scopus and Web of Science. *Asian Journal of Agricultural Extension, Economics & Sociology*, *41*(8), 1–11. https://doi.org/10.9734/ajaees/2023/v41i81973
8. Singh, V. K., Singh, P., Karmakar, M., Leta, J., & Mayr, P. (2021). The journal coverage of Web of Science, Scopus and Dimensions: A comparative analysis. *Scientometrics*, *126*, 5113–5142. https://doi.org/10.1007/s11192-021-03948-5
9. Verma, R., & Sharma, S. (2024). Assessing Research Quality through Scopus and WoS Insights: Case Study of MSIT. *Library Progress International*, *44*(1), 1–22. https://doi.org/10.52710/lpi.44.1.1

10. Visser, M., Van Eck, N. J., & Waltman, L. (2021). Large-scale comparison of bibliographic data sources: Scopus, web of science, dimensions, crossref, and microsoft academic. *Quantitative Science Studies*, *2*(1), 20–41. https://doi.org/10.1162/qss_a_00112
11. Yelne, S., Patil, M., & Umate, R. (2021). Assessment of Scientific Productivity of Health Sciences University in Central India using Bibliometric Analysis of Published Materials from Scopus and Web Assessment of Scientific Productivity of Health Sciences University in Central India using Bibliome. *Annals of the Romanian Society for Cell Biology*, *25*(4), 7173 – 7189.

Short Biographical Notes of Contributors

Mr. Praveen Kapoor is a research scholar in the Department of Library and Information Science, Mangalayatan University, Aligarh. He is also working as Sr. Associate Librarian at the University of Petroleum and Energy Studies, Dehradun. He has about 21 years of rich experience in the field of library and information science at various reputed academic organizations. He has qualified for the University Grants Commission – National Eligibility Test exam in the subject of Library and Information science and pursuing a Ph. D in Library and Information Science. His area of specialization is information technology, library automation and technology, electronic resources, information retrieval and repackaging. He has published research articles in various journals, conferences, and edited books. He has also presented papers at national and international conferences.

Dr. Ashok Kumar Upadhyay is presently working as a librarian and Head, Department of Library and Information Science, Mangalayatan University, Aligarh. He holds a Ph.D. in Library and Information Science from AMU, Aligarh. Dr. Upadhyay has nearly 16 years of academic and administrative experience as a library professional in various reputable organizations. His area of specialization is information technology, library management, and information retrieval and repackaging. He has published more than 120 quality research articles in various national and international journals, conferences, and edited books. He has participated in various national and international seminars, conferences, workshops, and LDPs and presented a number of quality research articles on different aspects of library and information science. He has also contributed his expertise in establishing the various libraries in the district jails of Ghaziabad, Aligarh, Gautam Budh Nagar, Lucknow, and Meerut. He has also been a member of the editorial team of various reputed journals with high impact factors. He has been the recipient of the Best Practicing University Librarian Award 2023 and the Global Eminent Academician Award 2023. He also visited the National Library of the Maldives, Male, for the academic assignment sponsored by SAARC, Documentation Centre.